



SAVING THE INTERNET

Jay Healey
Atlantic Council

@Jason_Healey

The Large Internet Trends

1. **Shift in people demographics** – different nations, different values and relationship of millennials
2. **Shift in device and computing demographics** – massive uptick in devices (IoT and IoE), change in how people connect (mobile), change in how and where computing is done (cloud, quantum, wearable and embedded)
3. **Massive growth in data** – big data, analytics, universal telemetry from IOT
4. **Growing tech and policy challenges** – Moore's Law? Network neutrality
5. **Breakdown of governance** – walled gardens, increase of national borders, decreasing trust, lack of large-scale crisis management mechanisms
6. **Continuing attacker and offense advantage over defense** – O>D



Cyberspace...

A global domain within the information environment consisting of the interdependent network of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers

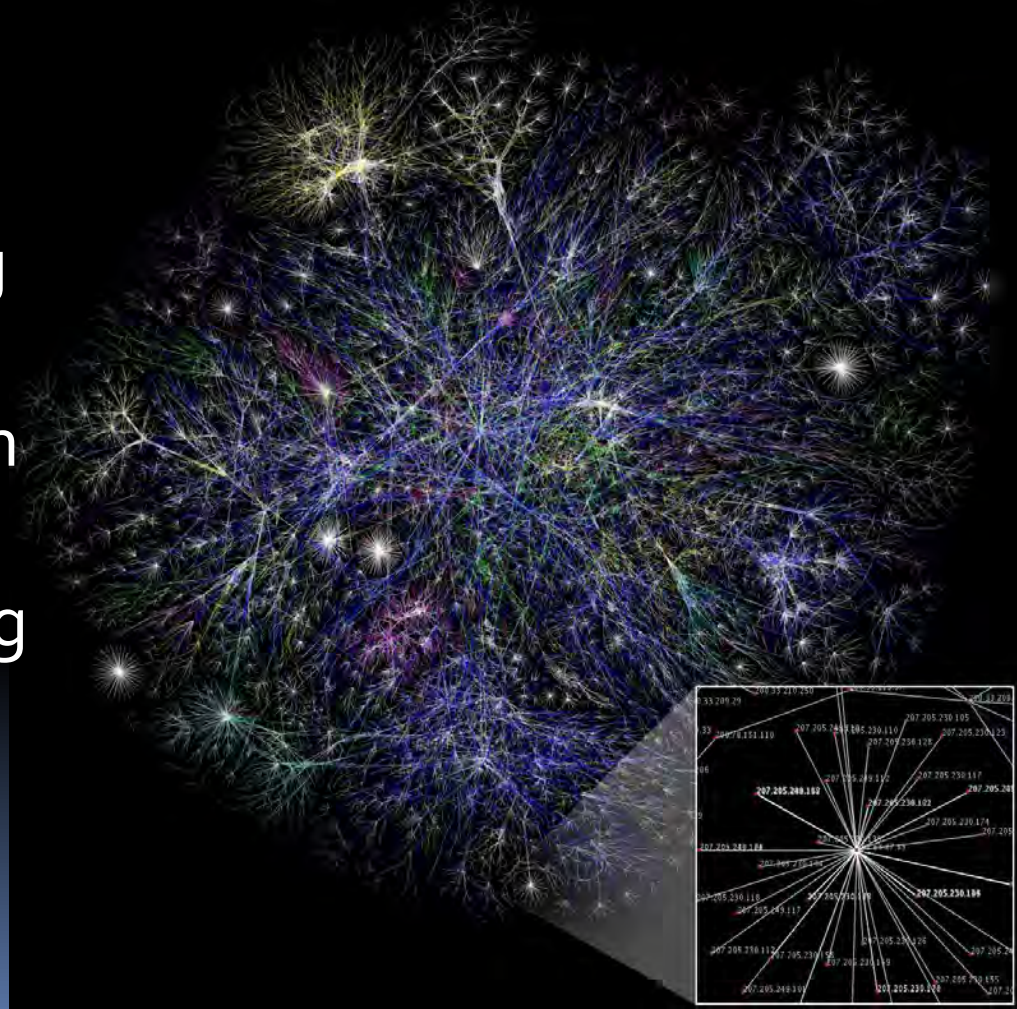
Domain of Warfare – or Not?

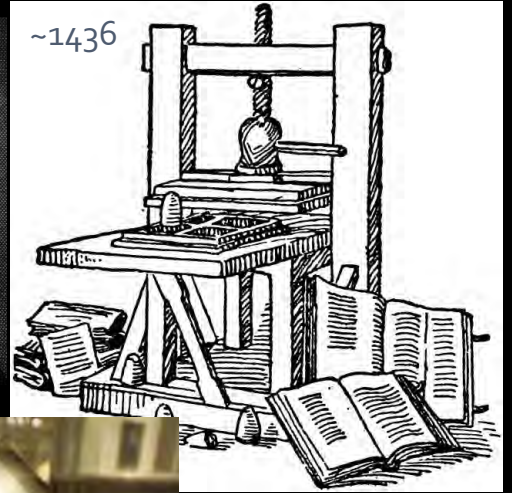
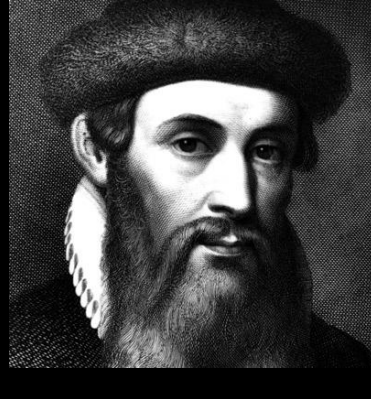
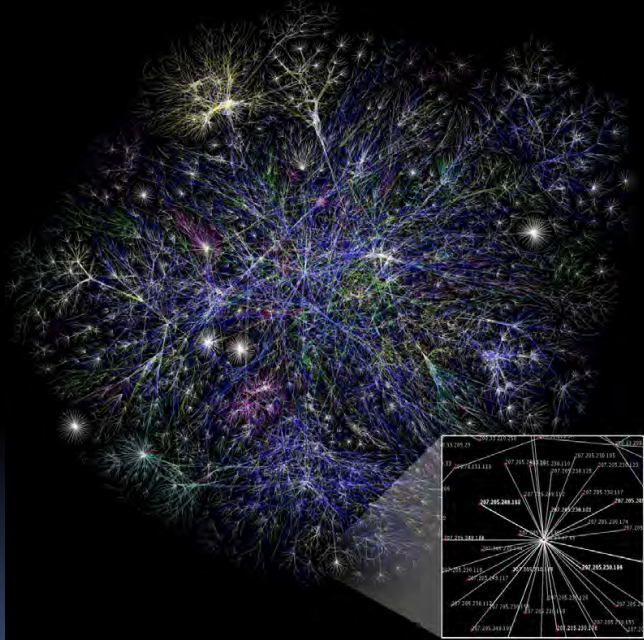
Although cyberspace is a man-made domain, it has become just as critical to military operations as land, sea, air, and space. As such, the military must be able to defend and operate within it.

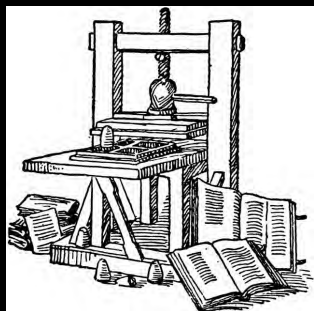
- Bill Lynn, then-Deputy Secretary of Defense

Global Commons?

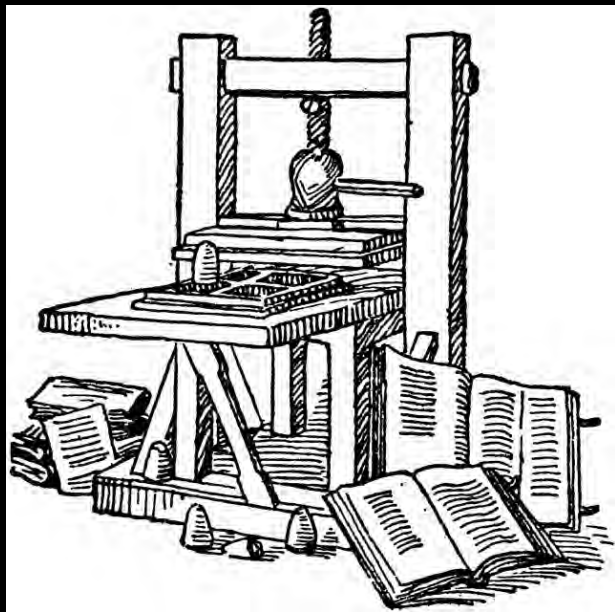
By increasingly equating
“cyber” with “national
security” the Washington
policy community has
militarized the underlying
resource, the Internet







*"If there is something you know,
communicate it.
If there is something you don't
know, search for it."*

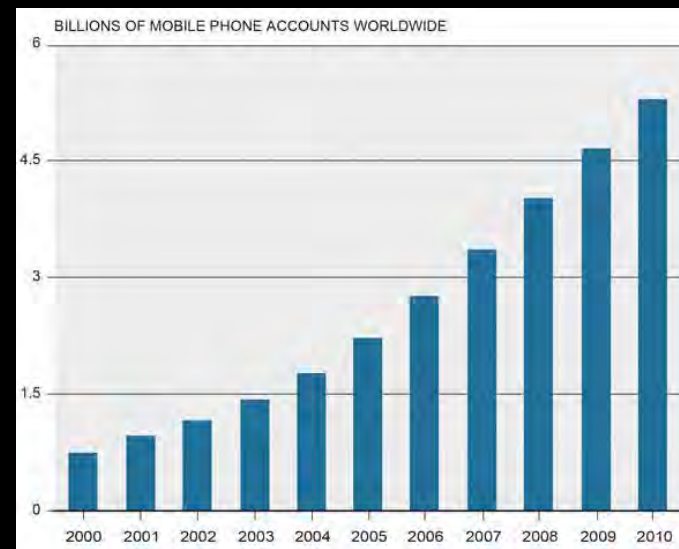
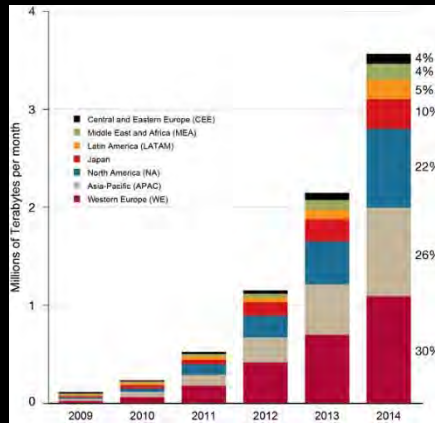
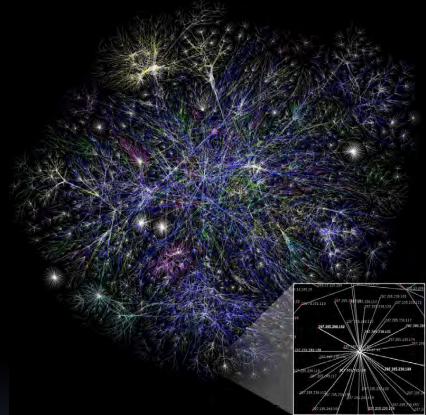


Violates Privacy? Civil Liberties?

Legal? Constitutional?

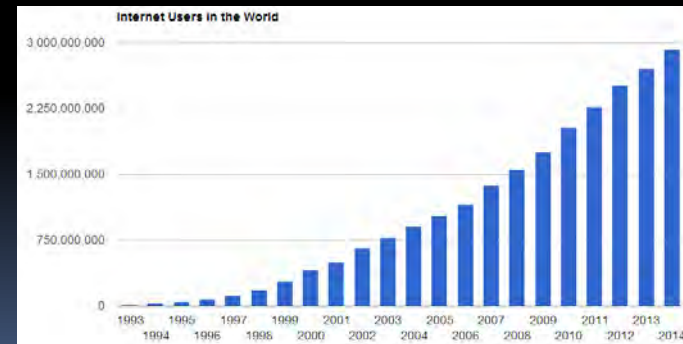


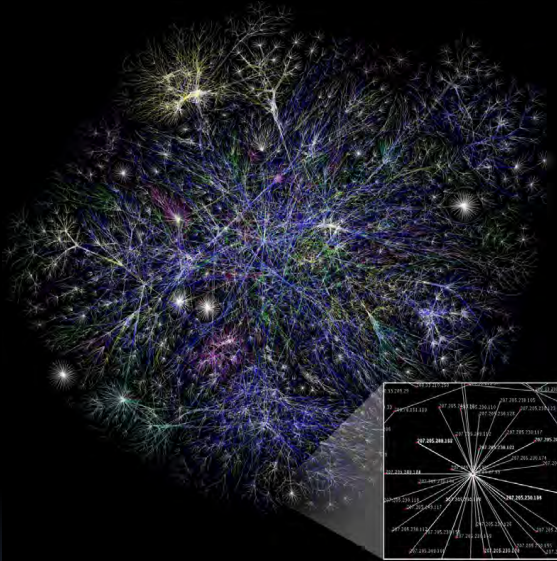
"If there is something you know, communicate it. If there is something you don't know, search for it."



Global Internet Users

1993: 14 million
2003: 778 million
2013: 2.7 billion
2030?
2280?



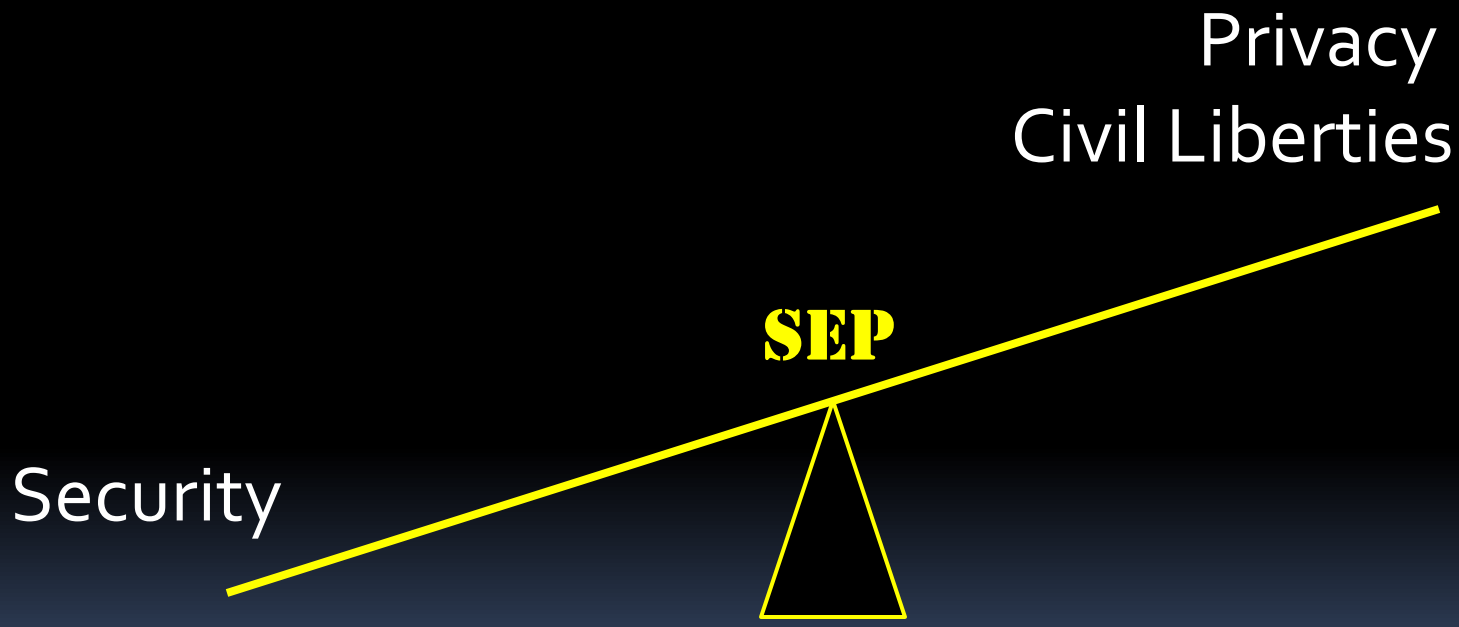


Data breaches
Cyber crime
Anonymous
Malware
Espionage
State-sponsored attacks
Stuxnet
Heartbleed
Erection of borders

...

...

...



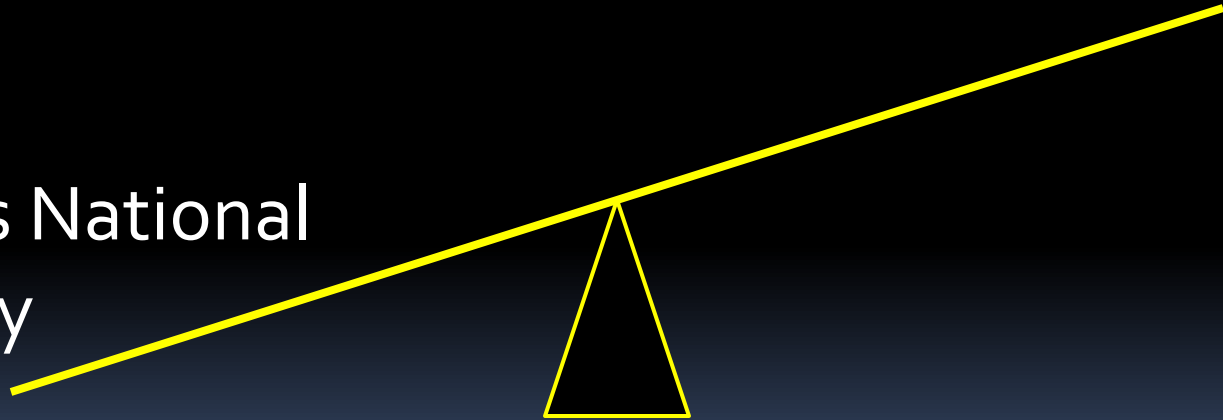
Security

SEP

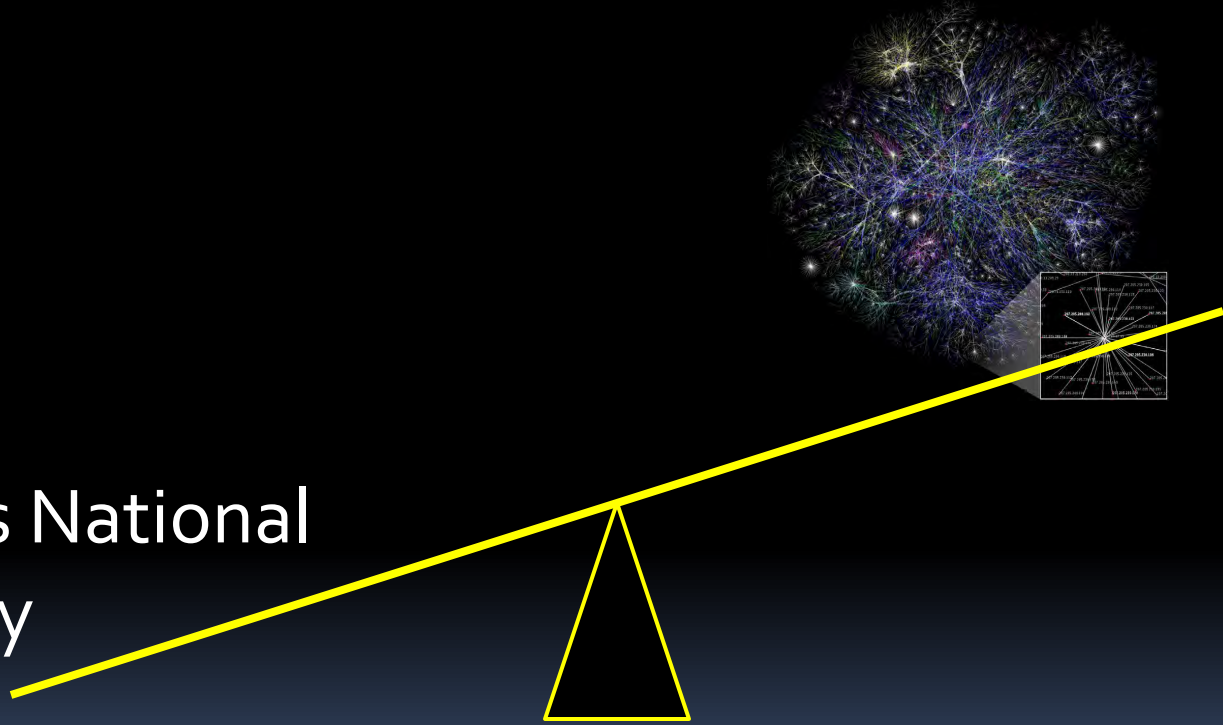
Privacy
Civil Liberties

Future Economic and
National Security

Today's National
Security

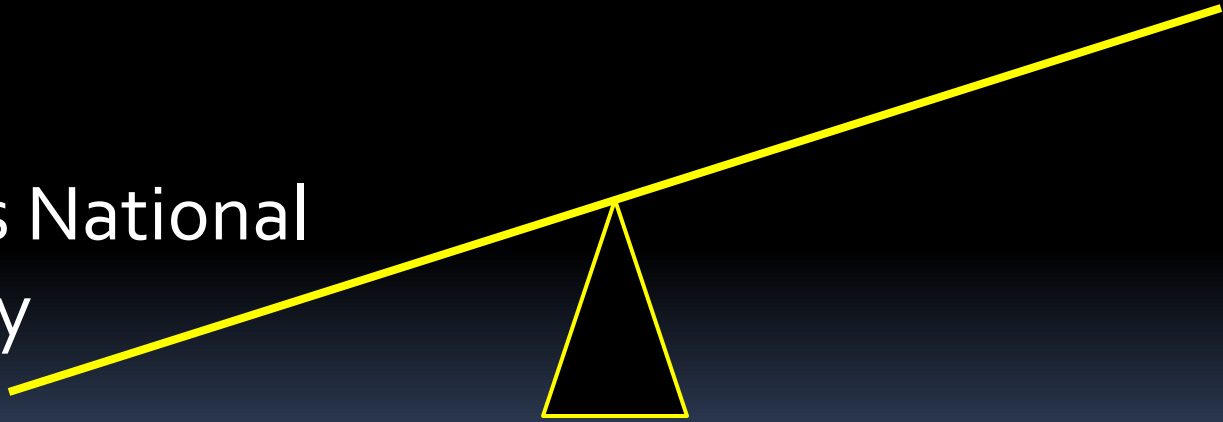


Today's National
Security



Future Possibilities
Until the End of
Humankind

Today's National
Security



How many future Renaissances and
Enlightenments will humanity miss

if we – all of us, for any purpose – keep
treating the Internet as a place for crime,
warfare and espionage?

2S
DEFCON





SAVING FOR WHOM?

Saving ... *for Whom?*

- Sustainable for future generations
 - Not just five years or fifty but two hundred and fifty
- Especially as some of the most innovative technologies in our near future *must have* strong security for us to unlock them without resulting disaster



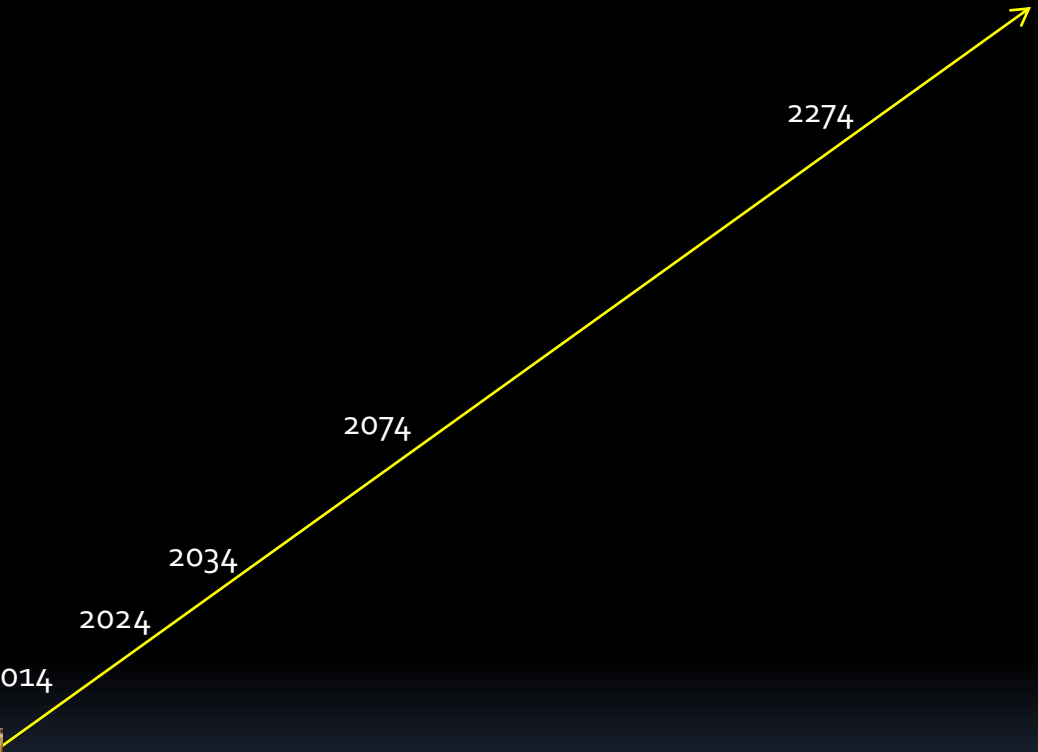
2014

2024

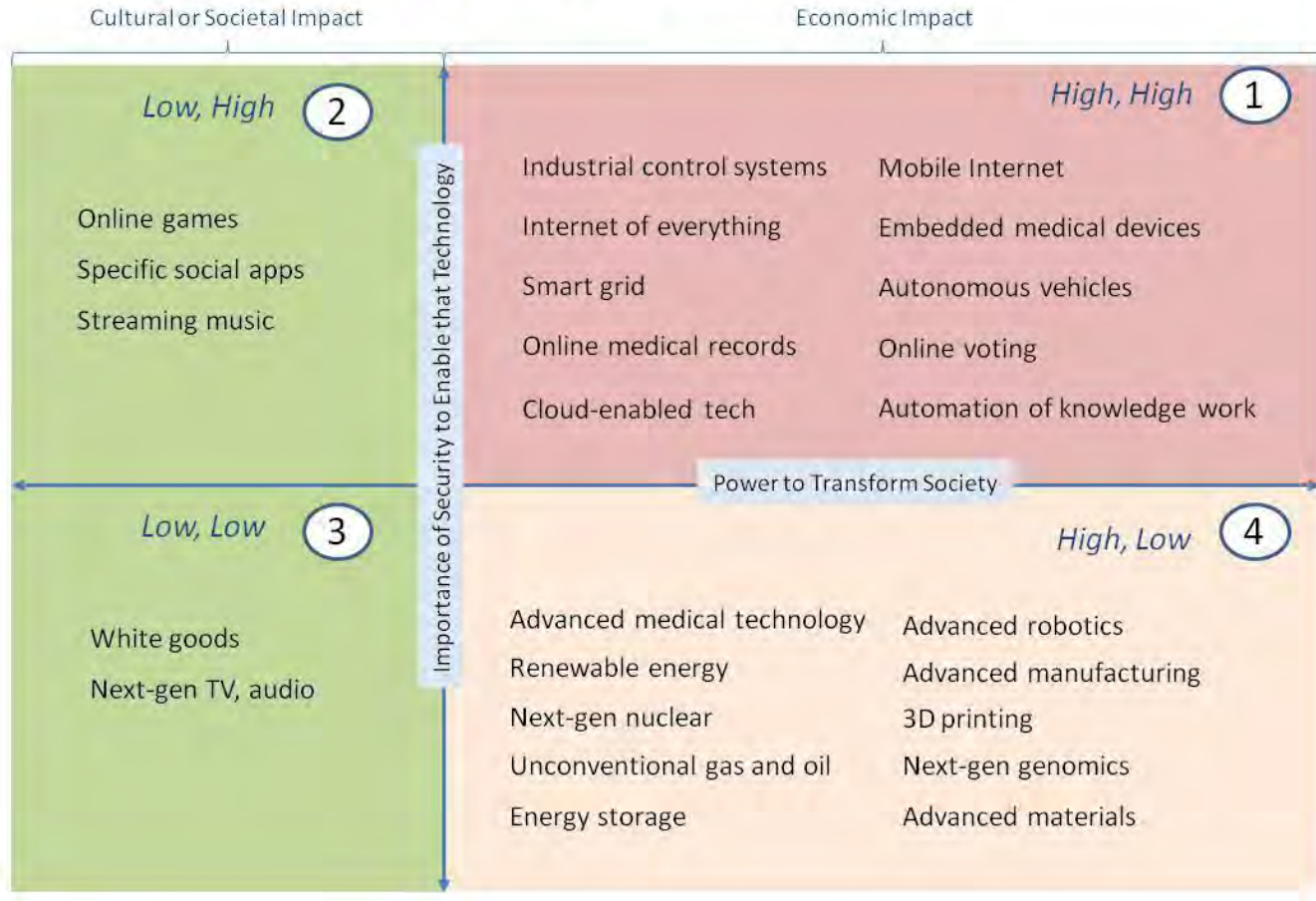
2034

2074

2274



Which of the Most Transformative Technologies Must Be Most Secure? – Illustrative





SECURITY *FROM WHAT*

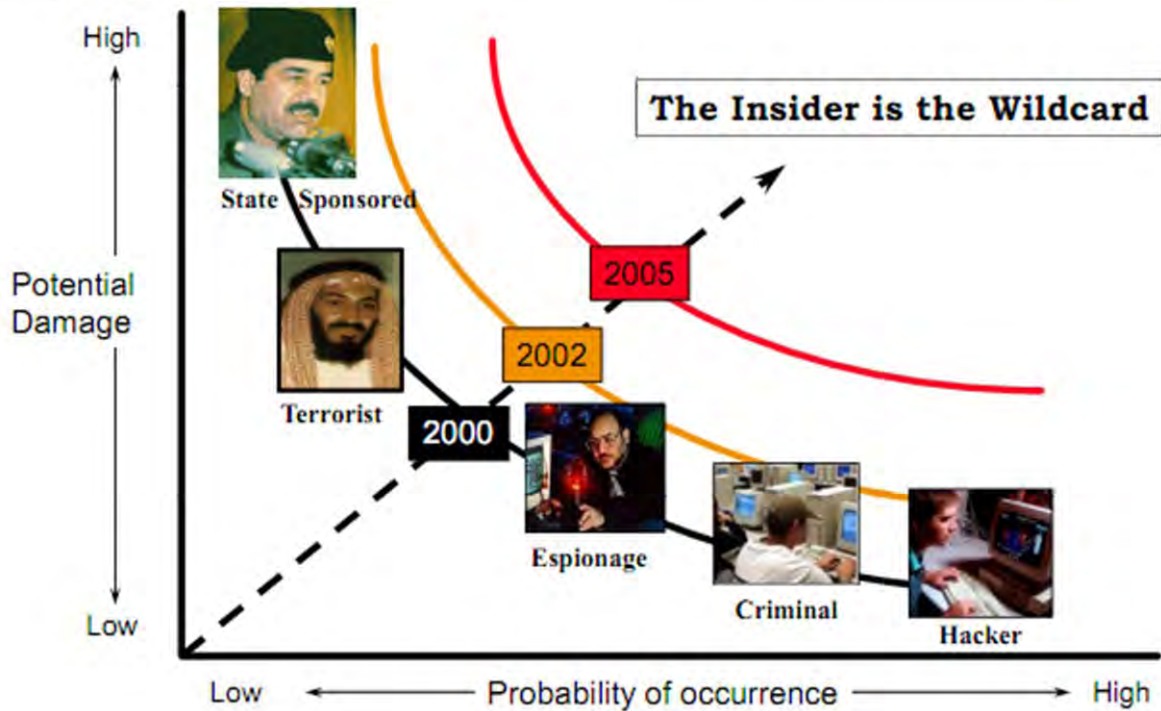


Saving ... *from What?*

- Obvious Stuff
- Global Shocks
- Tipping Point



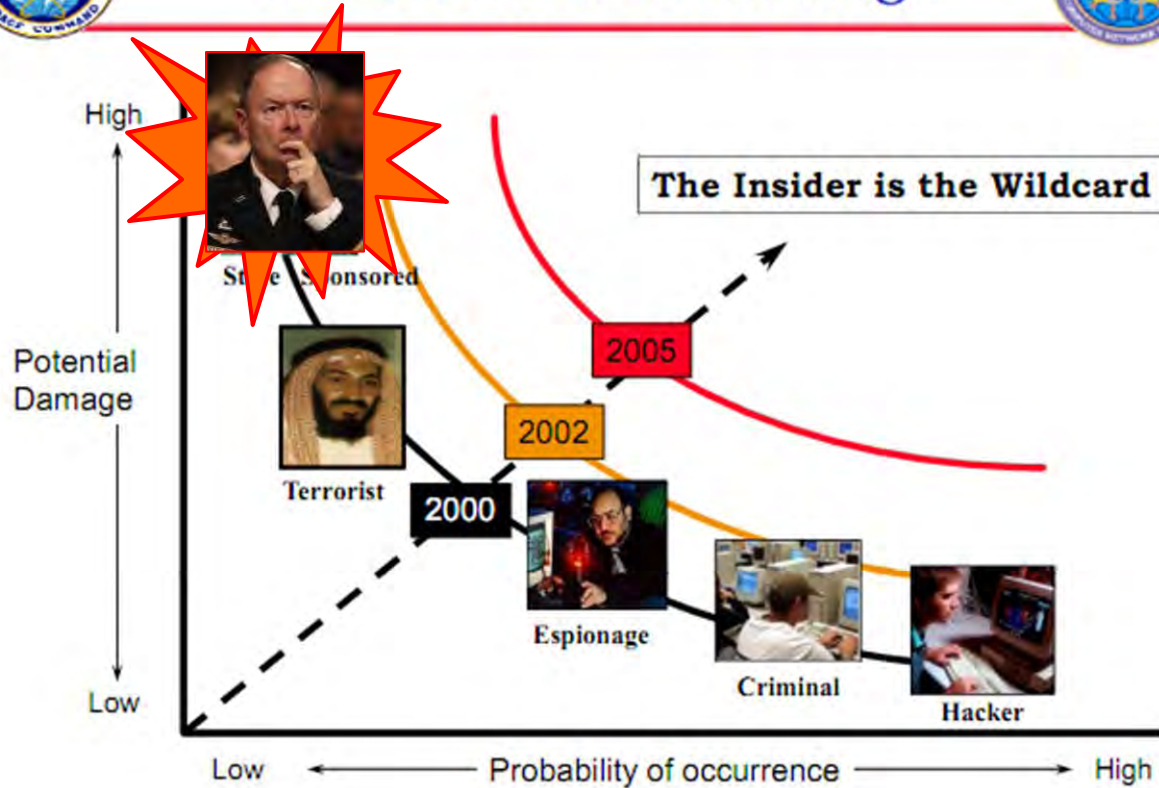
The Threat is Increasing



Source: 1997 DSB Summer Study



The Threat is Increasing



Source: 1997 DSB Summer Study



Global Shocks

Initiated or Amplified Through the Internet

“As society becomes more technologic, even the mundane comes to depend on distant digital perfection.”

Dan Geer

“This increasingly tight coupling of the internet with the real economy and society means a full-scale cyber shock is far more likely to occur.”

“Beyond Data Breaches: Global Interconnections of Cyber Risk”



Bad Guys Finish First

“Few if any contemporary computer security controls have prevented a [red team] from easily accessing any information sought.”

Lt Col Roger Schell (USAF) in 1979

Bad Guys Finish First

“Few if any contemporary computer security controls have prevented a [red team] from easily accessing any information sought.”

O>D

Doesn't Have to Stay This Way

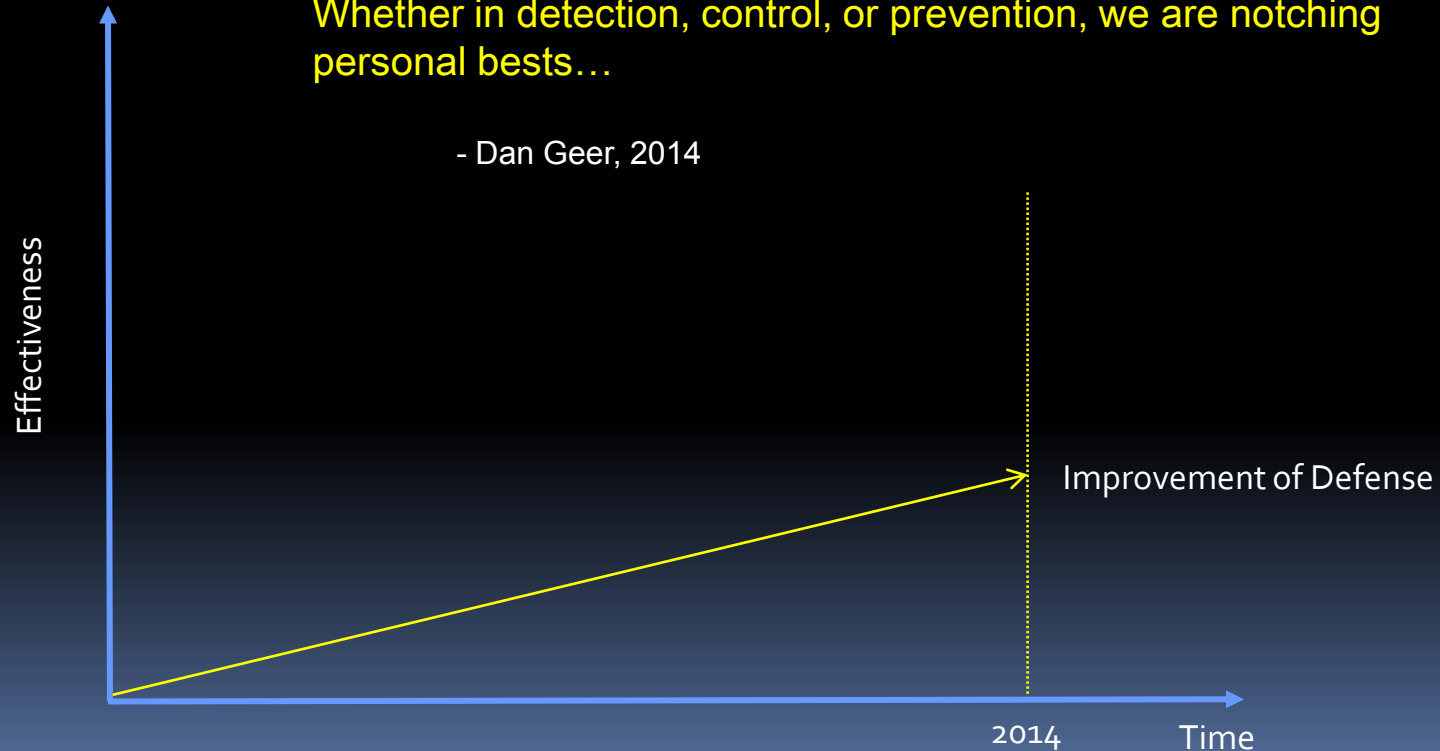




Great News! Security is Getting Better!

Whether in detection, control, or prevention, we are notching personal bests...

- Dan Geer, 2014



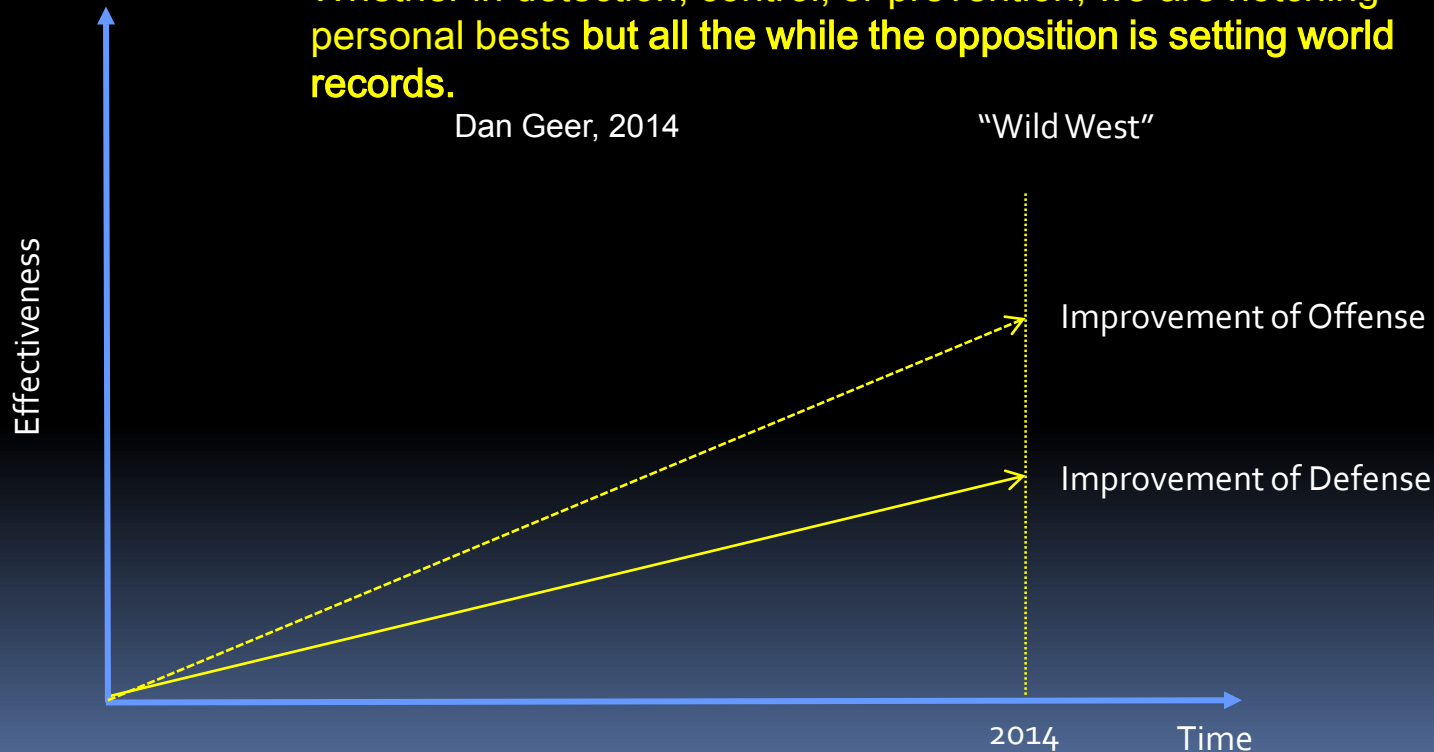


Bad News! We're Still Losing and at a Faster Rate!

Whether in detection, control, or prevention, we are notching personal bests **but all the while the opposition is setting world records.**

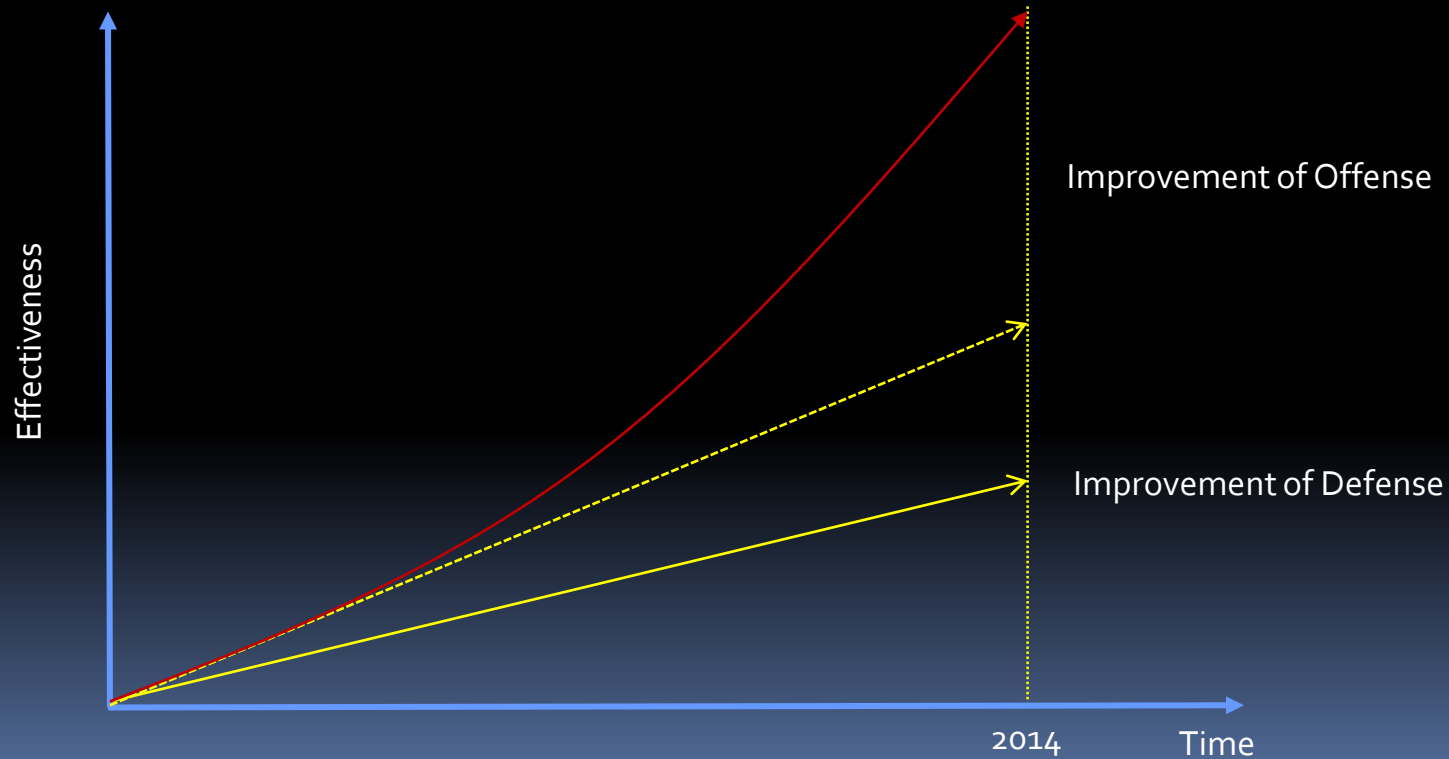
Dan Geer, 2014

"Wild West"



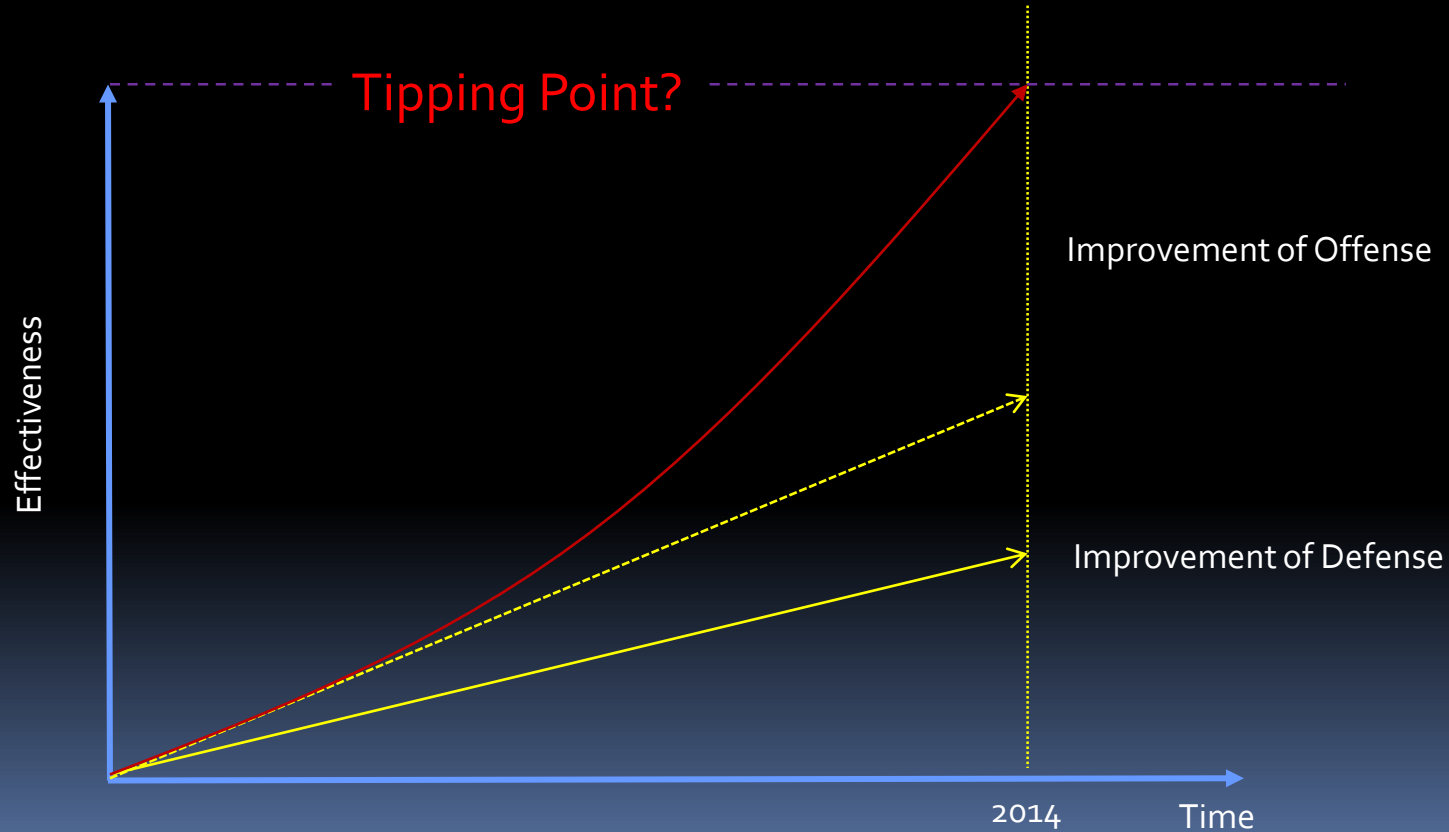


Or Is It Exponentially Worse?

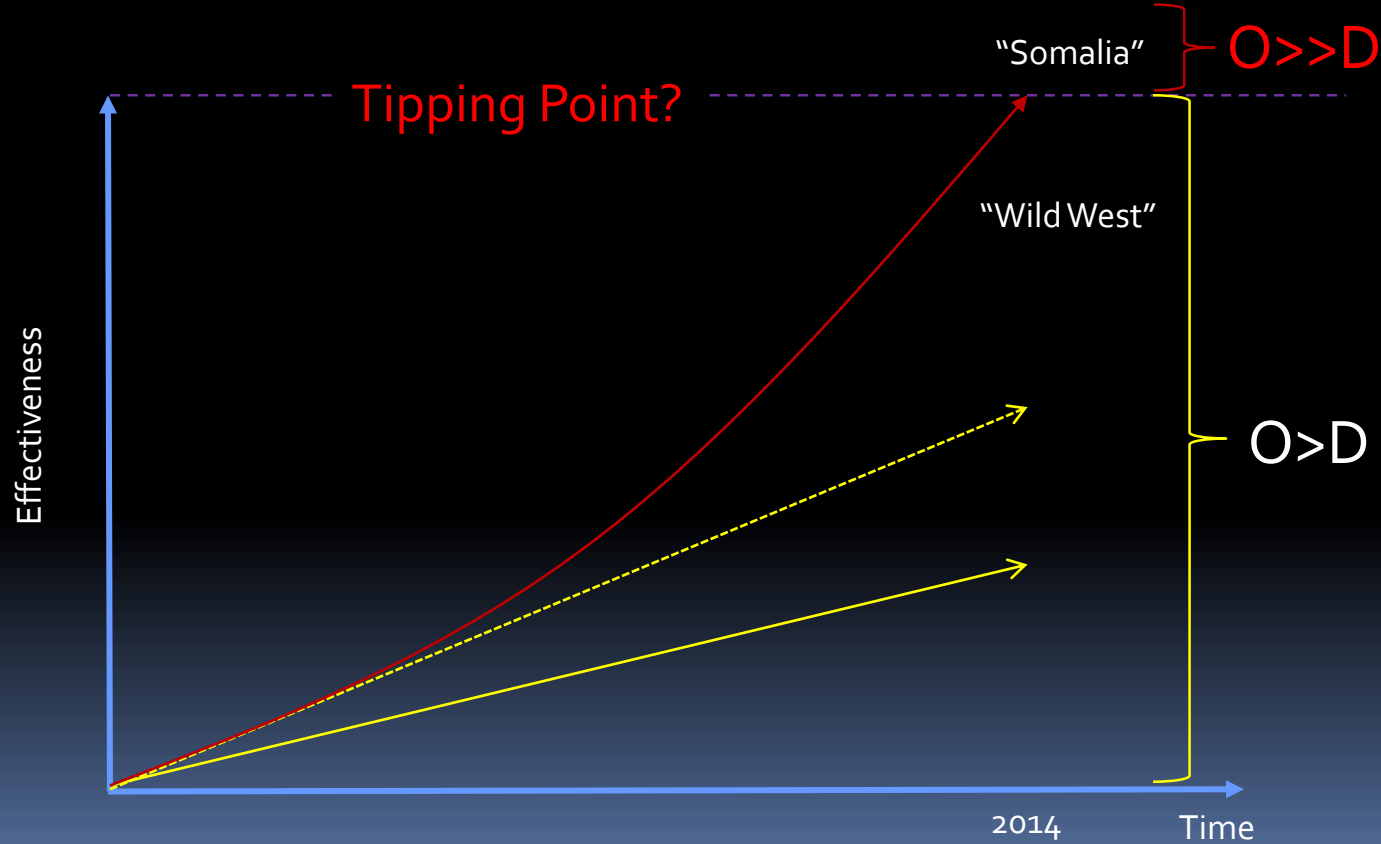




Can This Last Forever?



When Will There Be More Predators Than Prey?





SOLUTIONS

$D > 0$

$D \gg 0$

- Sustainable Cyberspace

- Private-Sector Centric Approach

- Working at Scale

- Single Cyber Strategy

- Disruptive Defensive Technologies ... but only if they work at scale!



Solutions

- What will *you* do?
- Are you *sure* you're really helping?

YOU WILL GO TO THE MOON

By Man and His Freeman



Illustrated by Robert Paterson



Questions?

Twitter: @Jason_Healey